



Is Social Capital Associated with Academic Achievement in Lithuanian High-school Students? A Population-based Study

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ABSTRACT The present study aims to determine the associations between family, neighbourhood, and school social capital with academic achievement among Lithuanian high-school students. The study included 1854 high-school students (901 males and 953 females) aged 16-18 years. At the end of the school year, the students' achievements were measured as an average grade. Family, neighbourhood, and school social capital were identified, indicating trust and understanding perceived from those social settings. Gender, body-mass index, self-perceived socioeconomic status, self-rated health, psychological distress and physical activity were also measured and used as covariates. Academic achievement was associated with family social capital, horizontal school trust and reciprocity at school. Family support, cooperation, and trust between students positively affect their achievement. Policies and strategies for a healthy environment for children need to be incorporated, especially within the school system for students' better progress.

KEY WORDS social capital, adolescents, academic success, multiple regression analyses



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SOCIAL CAPITAL AND ACADEMIC ACHIEVEMENT

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Introduction

School represents the fundamental basis for success today (Parcel & Dufur, 2001). Those students who were successful in school were more likely to have occupational placement and earnings attainment and achieve career success (Rodriguez, 2009) in later life. In contrast, academic achievements in school could be directly predicted by learning motivation (Legault, Green-Demers, & Pelletier, 2006). However, research shows that only 7% of school-age children in Lithuania have high learning motivation (Barkauskaitė & Sinkevičienė, 2012). Theories (Ryan & Deci, 2000), research (Edwards & Mullis, 2001; Niemiec & Ryan, 2009) and practice show that learning motivation, as a precondition of students' academic performance, could be enhanced if the social environment at school is supportive (Niemiec & Ryan, 2009).

Although students spend most of their time in school, other studies have reported that it is not the only factor responsible for promoting children's and adolescents' academic achievement (Stockard & Mayberry, 1992). Israel et al. (2001) state that the children that perform well academically were from well-educated families. The perception of parental (Sanders, 1998) and other types of social support (Legault et al., 2006) is also significant. The literature emphasizes that both family and neighbourhood social capital plays an important role for children gaining their knowledge and participating in public engagement (Lenzi et al., 2012). As a child develops mainly within the family, elements of family social capital, such as trust and networks, seem to have positive effects on the child's choices, accomplishments, and schooling performance (Putnam, 2000). Findings indicate that school-age children who perceive high support from all three sources (parents, peers and teachers) as opposed to none, one, or two, have better school attendance, have higher school satisfaction,

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engagement, study more, avoid problem behaviour, and show greater self-efficacy as well as higher schooling achievements. Thus, the combined support of parents, teachers and friends promotes positive school outcomes (Huang, 2009; Parcel & Dufur, 2009; Rodgers & Rose, 2002; Rosenfeld, Richman, & Bowen, 2000; Schwartz et al., 2009).

A study in Lithuania that examined family support have found that only 18% of school-age children perceived high support from their families and 25% did not feel supported at all (Buzaitytė-Kašalynienė, 2004). The results of another study in Lithuania showed that the better children perceive the relationship with teachers, the better their academic performance (Jurkėnaitė & Cibulskaitė, 2014).

To the knowledge of the authors of the current paper, there has been lack of studies investigating the associations between family, neighbourhood, and school social capital on youth academic performance. Along with social capital domains, there has also been a lack of studies that include covariates, such as physical activity, psychological distress, body-mass index, gender, and self-perceived socioeconomic status affecting academic achievements. Thus, the present study aimed to determine the associations between family, neighbourhood, and school social capital with academic achievement among Lithuanian secondary school pupils.

Methods

Participants

The study was conducted among Lithuanian secondary school students. They were selected using a random sampling approach. A total of 1863 adolescents (906 males and 957 females) aged 16-18 years were enrolled in the 2015-2016 school year. Characteristics are presented descriptively in Table 1. Before the procedure, all participants and their parents/guardians signed informed consent for testing approval. Every procedure

TABLE 1 Characteristics of the Study Participants

Characteristics	Total (N=1854) N (%)	Male (N=901) N (%)	Female (N=953) N (%)	p*
Body mass index				
Normal (<25 kg/m ²)	1683 (91.0)	793 (88.0)	890 (93.4)	
Overweight/obesity (≥25 kg/m ²)	171 (9.0)	108 (12.0)	63 (6.6)	<0.001
Self-rated health				
Poor	808 (43.6)	306 (34.0)	502 (52.7)	
Good	1046 (56.4)	595 (66.0)	451 (47.3)	<0.001
Self-perceived socioeconomic status				
Low	413 (22.3)	205 (22.7)	208 (21.8)	
Middle/high	1441 (77.7)	696 (77.3)	745 (78.2)	0.632
Psychological distress				
Low	1554 (83.8)	821 (91.1)	733 (76.9)	
High	300 (16.2)	80 (8.9)	220 (23.1)	<0.001
Physical activity				
Low	419 (22.6)	159 (17.6)	260 (27.7)	
Moderate/vigorous	1434 (77.4)	742 (82.4)	692 (72.6)	<0.001
Family social capital				
Poor	224 (12.1)	109 (12.1)	115 (12.1)	
Good	1630 (87.9)	792 (87.9)	838 (87.9)	0.984
Neighbourhood trust				
Poor	939 (50.6)	405 (44.9)	534 (56.0)	
Good	915 (49.3)	496 (55.1)	419 (44.0)	<0.001
Informal social control				
Poor	1286 (69.4)	650 (72.1)	636 (66.7)	
Good	568 (30.6)	251 (27.9)	317 (33.3)	0.012
Vertical school trust				
Poor	922 (49.7)	415 (46.0)	507 (53.2)	
Good	932 (50.3)	486 (54.0)	446 (46.8)	0.002
Horizontal school trust				
Poor	856 (46.2)	364 (40.4)	492 (51.6)	
Good	998 (53.8)	537 (59.6)	461 (48.4)	<0.001
Reciprocity at school				
Poor	429 (23.1)	205 (22.7)	224 (23.5)	
Good	1425 (76.9)	696 (77.3)	729 (75.6)	0.701

Note. *Chi-square test

that was carried out was done so in accordance with the ethical standards of the institutional and/or national research committee and also met the ethical standards of the 1964 Helsinki declaration.

Academic achievement

The Lithuanian school system has 10-item scale categories representing student's average grade points: (1.00-1.99) completely poor, (2.00-2.99) very poor, (3.00-3.99) poor (all three are equivalent to grade F in US grading system), (4.00-4.99) unsatisfactory (is an equivalent of grade D), (5.00-5.99) sufficient, (6.00-6.99) satisfactory – both represent C, (7.00-7.99) highly satisfactory, (8.00-8.99) good – are an equivalent of B, (9.00-9.99) very good and (10.00) excellent; both represent grade A in the US grading system (<http://www.classbase.com/countries/Lithuania/Grading-System>). Table 2 presents the average grades for males and females.

TABLE 2 Academic Achievement Points According to Gender

	Total (N=1854)	Male (N=901)	Female (N=953)	Z	p*
Students' achievement	7.95±1.19	7.57±1.25	8.32±1.01	13.21	<0.001

Note. *Man-Whitney U test

Social capital domains

Social capital in children and youth consists of family, neighbourhood and school social trust (Morrow, 1999). One item was used to assess family social capital: "Do you feel that your family understands and gives attention to you?". Neighbourhood social capital was assessed using two items: "Do you feel people trust each other in your neighbourhood?", indicating neighbourhood trust and "Do you feel that your neighbours step in to criticize someone's deviant behaviour during high school", indicating informal social control. School social capital was assessed using three items: "Do you feel that teachers and students trust each other in your high-school?", "Do you feel students trust each other in your high-school?" and "Do you think students collaborate with each other in your high school?". The first school social capital item referred to vertical school trust, the second one to horizontal school trust, and the third to reciprocity at school. Possible answers were arranged across a five-item Likert-type scale: (1) strongly agree, (2) agree, (3) neither agree nor disagree, (4) disagree and (5) strongly disagree. We binarized the outcome of each variable as "high" (strongly agree and agree) and "low" (neither agree nor disagree, disagree and strongly disagree).

Covariates

The validated short version of the International Physical Activity Questionnaire (IPAQ) was used to assess covariates of physical activity and was expressed as the metabolic equivalent hours per week (Craig et al., 2003). As additional potential mediators, self-reported height and weight were used to calculate body mass index. Based on body mass index results, participants were divided into two groups (normal and overweight/obese), according to the International Obesity Task Force. Parental socioeconomic status was entered in our regression models as a potential confounder, that is, theoretically associated with self-rated health and social capital (Subramanian et al., 2002). The participants' socio-economic status was based on their parents' occupation at the time the research was carried out. Three levels were used to categorize self-measured socio-economic (high, middle and low) (Wang et al., 2005); it was defined as high/middle (answers from 2-4) and low (answers from 5-6).

A potential confounder was psychological distress and was assessed using the six-item Kessler scale by the questions: "About how often during the past 30 days did you feel nervous?", "During the past 30 days, about how often did you feel hopeless?", "During the past 30 days, about how often did you feel restless or fidgety?", "How often did you feel so depressed that nothing could cheer you up?", "During the past 30 days, about how often did you feel that everything was an effort?" and "During the past 30 days, about how often did you feel worthless?" (Kessler et al., 2003). Every item is given a score from 0 (never) to 4 (always). When all six questions were totalled together, a lower result suggested lower psychological distress. A score of 13+ was used as a scoring system in the literature (Kessler et al., 2003).

The question "How would you estimate your health?" was used to assess self-rated health. Possible responses were arranged through a five-item Likert-scale: very poor (1), poor (2), fair (3), good (4) and excellent (5). Given responses were binarized, where answers very poor, poor and neither poor nor good were categorized as poor, while good and excellent represented good self-rated health. Perceived health in previous research has been used as a measure of predicting mortality in adults (Idler & Benyamini, 1997), as well as in adolescents (Johnson & Richter, 2002).

Statistical analysis

SPSS 18.0 software was used to analyse all the data (SPSS Inc. Chicago, IL USA). Percentages were used to determine the number of questions answered (%). A Chi-square test was used to determine the categorical variables. Gender differences in average grade points were determined using a non-parametric Man-Whitney U-test. The relationship between social capital and schooling performance were determined using multivariate regression analysis. Gender, body mass index, level of socio-economic status, self-rated health,

level of psychological distress, and level of physical activity were used as potential cofounders. In the present study, we investigated the associations between family social capital and academic achievement (model 1; adjusted for gender, body mass index, self-rated health, self-perceived socioeconomic status, psychological distress and physical activity), between neighbourhood social trust and academic achievement (model 2; adjusted for gender, body mass index, self-rated health, self-perceived socioeconomic status, psychological distress and physical activity), between school social trust and academic achievement (model 3; adjusted for gender, body mass index, self-rated health, self-perceived socioeconomic status, psychological distress and physical activity) and between all social capital determinants, simultaneously entered into the model, with academic achievement (model 4; adjusted for gender, body mass index, self-rated health, self-perceived socioeconomic status, psychological distress and physical activity).

Results

Over 90% of all participants had normal body mass index. Roughly, 40% of all participants reported having poor self-rated health. Males and females almost equally reported middle/high self-perceived socioeconomic status. Females reported having higher psychological distress than males did (23.1% vs. 8.1%, respectively). Furthermore, females had higher distrust towards neighbours, teachers and other colleagues than males did (Table 1).

Average grade points are presented in Table 2. According to the analysis, females had significantly better grade averages than males did (p<0.001).

The associations between family, neighbourhood, and school social capital with academic achievement are presented in Table 3. While controlling for gender, body mass index, self-rated health, self-perceived socioeconomic status, psychological distress, and physical activity, better academic achievement was significantly predicted by higher family social capital in Model 1 (β 0.28; 95% CI 0.09 to 0.54) and by higher horizontal school trust (β 0.15; 95% CI 0.03 to 0.27) as well as better perceived reciprocity at school (β 0.22; 95% CI 0.08 to 0.36) in Model 3. Neighbourhood trust and informal social control had no predictive value in Model 2. When all variables were entered simultaneously in Model 4, better academic achievement was predicted by higher family social capital (0.27; 95% CI 0.08 to 0.45), lower neighbourhood trust (β -0.11; 95% CI -0.22 to -0.01), higher horizontal school trust (β 0.17; 95% CI 0.05 to 0.29) and better perceived reciprocity at school (β 0.21; 95% CI 0.07 to 0.34). Informal social control and vertical school trust remained insignificant (p > 0.05) in the last model. Gender (females reported higher grade point average), higher self-rated health, self-perceived socioeconomic status and physical activity, and lower body mass index and psychological distress were related with higher schooling performance.

TABLE 3 Associations between Predictors with Individual High-school Academic Achievement

Predictors	Model 1	Model 2	Model 3	Model 4
	β (95% CI)	β (95% CI)	β (95% CI)	β (95% CI)
Family social capital	0.28 (0.09 to 0.47)***			0.27 (0.08 to 0.45)**
Neighbourhood trust		-0.03 (-0.13 to 0.08)		-0.11 (-0.22 to -0.01)*
Informal social control		-0.05 (-0.16 to 0.05)		-0.06 (-0.17 to 0.04)
Vertical school trust			-0.06 (-0.17 to 0.05)	-0.06 (-0.18 to 0.05)
Horizontal school trust			0.15 (0.03 to 0.27)*	0.17 (0.05 to 0.29)**
Reciprocity at school			0.22 (0.08 to 0.36)**	0.21 (0.07 to 0.34)**
Gender	0.76 (0.65 to 0.86)***	0.76 (0.65 to 0.87)***	0.76 (0.66 to 0.87)***	0.75 (0.65 to 0.86)***
Body mass index	-0.26 (-0.46 to -0.07)**	-0.27 (-0.46 to -0.08)**	-0.26 (-0.46 to -0.06)**	-0.26 (-0.44 to -0.06)**
Self-rated health	0.21 (0.10 to 0.32)***	0.23 (0.12 to 0.34)***	0.22 (0.11 to 0.32)***	0.21 (0.10 to 0.32)***
Self-perceived socioeconomic status	0.55 (0.42 to 0.68)***	0.57 (0.44 to 0.70)***	0.54 (0.41 to 0.66)***	0.53 (0.40 to 0.66)***
Psychological distress	-0.28 (-0.41 to -0.14)***	-0.24 (-0.38 to -0.10)**	-0.29 (-0.42 to -0.14)***	-0.31 (-0.45 to -0.17)***
Physical activity	0.15 (0.02 to 0.29)*	0.17 (0.04 to 0.30)*	0.14 (0.01 to 0.27)*	0.14 (0.00 to 0.27)*

Note. *p<0.05; **p<0.01; ***p<0.001

Discussion

The present study aimed to determine whether family, neighbourhood, and school social capital were associated with academic achievement among Lithuanian high-school students aged 16-18 years.

The development of the current system of education in Lithuania started in the 1990s. General education lasts for 12 years and is acquired in three stages: primary: four years (forms 1-4); lower secondary: six years (forms 5-10); and secondary: two years (forms 11-12). Each stage can be followed in a separate independent institution or in one general institution. Secondary education can also be provided by other types of establishments, such as classic gymnasiums and international baccalaureate (IB) schools. Education at municipal state schools is free of charge. According to the constitution adopted in 1992, education is compulsory until the age of 16 (<http://>

www.smm.lt/web/en/education_1). The current research covered 10-12th form students in lower secondary and secondary schools and 2nd-4th form students in gymnasiums. Our results showed the relationship between academic achievement and family social capital, which is similar to the results of other studies (Huang, 2009; Kim & Schneider, 2005; Parcel & Dufur, 2009). Meier (1999) reported positive associations between human and economic capital at home with parent-child discussion of school activities, involvement in school activities and parent-school academic contact. Kim & Schneider (2005) showed that the alignment of parents' and students' goals increases students' odds of attending a college institution in the year after high-school graduation. The relationship of the educational upbringing of the parents is dependent on aligned ambition and action between parents and youth (Kim & Schneider, 2005). A few studies reported that a strong children's home environment was associated with greater verbal facility (Parcel & Menaghan, 1990), mathematics and reading achievements (Parcel & Menaghan, 1994), and lower levels of risky behaviours (Parcel & Menaghan, 1993). Children from more cohesive families and living with both parents have advantages in educational achievement and overall well-being (McLanahan & Sandefur, 1994).

The results of the current study showed an inverse, although weak, relationship between academic achievement and neighbourhood trust. Higher neighbourhood trust was related to lower academic achievement. Most likely, relationships in the neighbourhood are not significant enough factors to impact academic achievements. Other studies reported links of neighbourhood trust to children's mental health (Meltzer, Vostanis, Goodman, & Ford, 2007). The negative impact of neighbourhood trust on children's academic achievement may be explained following Wilson (1987), who reported that many negative outcomes observed in poor neighbourhoods. Moreover, children who live in high-poverty neighbourhoods interact poorly with people who are employed, possibly causing discouragement, and put in less effort, leading to poor performance (Wilson, 1987). Another study also showed that children's neighbourhood social capital is closely related to their parents' neighbourhood social capital. If parents avoid the local environment, then children are less likely to become immersed in local networks (Weller & Bruegel, 2009).

Since independence in 1990, there have been many changes in Lithuania: increased unemployment, emigration, crime, alcoholism, drug abuse, and depression (Juska, Johnstone, & Pozzuto, 2004) have definitely affected social connections within the communities. Furthermore, different reasons forced people to move from one area to another, which might affect neighbourhood trust as new people in the area are less likely to have high neighbourhood social capital (Weller & Bruegel, 2009). Since Independence, society in Lithuania has turned from collectivistic to individualistic. As a result, young people are generally more Westernized than their parents and the people they are surrounded with, which represents a major gap between the generations.

Academic achievement was positively associated with horizontal trust and reciprocity at school in the current study, which is similar to some other studies (Edward & Mullis, 2001; Huang, 2009). Huang (2009) found that higher school social capital was associated with better academic achievement. It also might be suggested that the nature of the relationship is one way (i.e. school social capital impacts better achievement, and not vice versa) as one retrospective study showed that assessment marks did not impact relationships at school (Emeljanovas, Malinauskas, Valantine, & Hardman, 2015). Furthermore, some studies showed that academic performance can be encouraged when schools possess social capital through strong ties and networks with communities, such as family (Coleman, 1988; Haghghat, 2005). Haghghat (2005) reported that, aside from parents' involvement, school social capital played an important role in reaching out to parents, creating a positive learning ambience for teachers and students and supporting parents to be more involved. Moreover, the author stated that school ambience (absence of conflict between teachers and students, absence of violence in the school) had a significant and positive effect on students' mathematics and reading achievements. School outreach (parents involved in students' achievements) also showed positive association with mathematics achievement, but not on reading test scores (Haghghat, 2005). Another study, from Gottfried, (2010) showed a strong positive relationship between school attendance and academic achievement for both primary and secondary school students.

This study has several limitations. First, due to its cross-sectional design, we cannot exclude possible reverse causality, that is, higher academic achievement may result in higher family and school social capital. Secondly, a subjective approach of social capital was used; therefore, common method bias is a possibility. Again, the different findings for each type of social capital suggest that this is not very likely. Third, the social capital variables in our study are analysed at the individual level. Therefore, we are referring to the students' individual perceptions of social capital.

In general, this study showed that both family and school social capital are the key factors for students' academic achievement. Cohesive and supportive family and cooperation with peers within the school contribute to better school attendance, stronger relationships and help, which lead to academic achievement. Connections between families, communities, and schools need to be built to contribute to the school effectiveness and functioning. Similar studies in other countries with different socioeconomic characteristics and different school systems need to be made for future policies and strategies to be incorporated and realized. More in-depth studies examining not only students' perceptions of different domains of social capital, but also their parents, school, family and neighbourhood social capital perceptions, would be appreciated. The interactional effect on students' achievement not only of different domains of social capital, but also of different sources of obtained information would be essential to examine in the future.

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